

Remarks/Arguments

Applicants have carefully considered the rejection in the previous office action and submit the foregoing amendments and the following response. Applicant gratefully acknowledges the withdrawal of the rejection of previous claims 1-15, 19-32 and 121 over U.S. Patent No. 3,761,410 to Mondshine.

In the present response, independent claims 127, 141, 160, and 171 have been amended and certain housekeeping amendments have been made to the preamble of a number of claims. The amendments add no new matter and are believed to place the application in condition for allowance.

Rejection of claims 127-154 and 171-181 as obvious over Fukutani

The examiner rejected claims 127-154 and 171-181 as obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 6,448,207 to Fukutani et al. The examiner argued that there was no difference between the claimed “drilling equipment” and the “drills” in Fukutani, taking the position that “cutting tools containing drills constitutes ‘drilling equipment.’” Office Action, p.3. The examiner contended that it would have been “obvious to the skilled artisan to have used the aqueous metal working fluid composition of Fukutani, which is taught to be suitable for use with bites (sic) and drills of cutting tools, to provide lubrication for ‘drilling equipment’” The examiner also contended that Fukutani’s metal working composition met “the limitations of the claimed drilling fluid system ‘comprising’ an alkali metal fatty acid soap.” Office Action, p. 2-3.

Response

Independent claims 127, 141, 160, and 171 have been amended to clarify that the method comprises:

drilling through a subterranean formation using the drilling fluid system under conditions effective to maintain effective rheology and fluid loss control properties and to react said fatty acid soap with one or more metal surfaces of drilling equipment in contact with said drilling fluid system, thereby producing lubricated drilling equipment comprising one or more metal surface comprising a substantially continuous lubricating film providing improved lubricity as reflected in an increase in lubricating film strength compared to a control during extreme pressure testing.

Claims 127, 141, 160, and 171.

The examiner cannot establish an express teaching to use Fukutani's aqueous metal working fluid composition as a drilling fluid system when "drilling through a subterranean formation." Nor can the examiner establish that it would have been a predictable use of Fukutani's aqueous metal working fluid composition to "drill[] through a subterranean formation." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, 127 S.Ct. 1727, 82 U.S.P.Q.2d 1385, 1396 (U.S. 2007)

As explained in U.S. Patent No. 5,658,860 to Clark et al ("Clark"):

[A] drilling fluid must be capable of performing many varied functions which are required in a successful drilling procedure and therefore must possess certain desirable chemical and physical properties. The drilling fluid must have sufficient viscosity to suspend and remove the cuttings from the borehole and must have sufficient gel strength to hold solids in suspension, especially when circulation is interrupted. It also must have sufficient density to exert suitable pressure to the sides of the borehole to prevent the entrance of fluids into the borehole from the earth formation being penetrated, and it must have low fluid loss to prevent undue loss of fluid into the formation by its deposition on the borehole sides as by forming an impervious filter cake or deposit. Further, it must lubricate both the bearing and cutting surfaces of the drill bit as well as the string of drill pipe both upon rotations and vertical movement.

Clark, col. 1 ll. 47-62.

The examiner cannot establish that Fukutani's "aqueous metal working fluid" would "maintain effective rheology and fluid loss control properties" when used as a drilling fluid system and "drilling through a subterranean formation." Nor can the examiner establish that the claims are directed merely to "**the predictable use of prior art elements according to their established functions.**" *KSR Int'l Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d at 1396 (emphasis added). The examiner therefore cannot establish a case of *prima facie* obviousness of the amended claims over Fukutani.

Applicant respectfully requests that the rejection of claims 127-154 and 171-181 as obvious over Fukutani be withdrawn.

Rejection of claims 127-190 over U.S. Patent No. 5,658,860 to Clark et al (“Clark”), alone or in combination with U. S. Patent No. 6,503,537 to Chesser et al (“Chesser”)

The examiner also rejected claims 127-190 as obvious under 35 U.S.C. § 103(a) over Clark, alone, or in combination with Chesser. In response to Applicants’ arguments, the examiner contended that “suitable fatty acids include those having a carbon chain length of 8-30 carbon atoms and Clark teaches that derivatives of the fatty acids may be used including alkali metal derivatives.” Office action, p. 5. The examiner contended that “Applicant’s open ended claim language ‘comprising’ allows for the addition of other additives to the aqueous composition such as the oil phase component of Clark.” *Id.*

Response

The examiner has the burden to establish that the claimed method is merely “the predictable use of prior art elements according to their established functions.” *Id.* (emphasis added).

Specifically, the examiner has the burden to establish that “providing a drilling fluid system having effective rheology and fluid loss control properties . . . comprising a continuous phase comprising as an integral component a dispersion comprising a quantity of fatty acid soap” . . . comprising “alkali metal selected from the group consisting of lithium, potassium, rubidium, cesium, and combinations thereof,” is merely “the predictable use of prior art elements according to their established functions.” *Id.* (emphasis added); *see* claim 1. The examiner has not met this burden.

As an intial matter, the examiner cannot establish an express teaching in any cited reference--including Clark--to provide a drilling fluid system meeting the foregoing limitations. The examiner argues that, “Clark teaches that derivatives of the fatty acids may be used including alkali metal derivatives.” Office action, p. 4, citing Clark, col. 5, ll. 37-58. However, as explained in the specification:

[0010] Previous lubricants, sometimes called boundary lubrication additives, generally used fatty acid soaps of metals *having a relatively high valence*, such as aluminum. Most current drilling fluid systems comprise polymeric materials which tend to react with metals having valences greater than 1. The reaction between the polymeric material and a high valence metal in a fatty acid soap adversely affects drilling fluid

properties.

See US2005/0197255, ¶¶ [0010].(emphasis added). The examiner has not established that providing a drilling fluid system comprising the claimed fatty acid soap comprising “alkali metal selected from the group consisting of **lithium, potassium, rubidium, cesium, and combinations thereof**” is merely “**the predictable use of prior art elements according to their established functions.**” *Id.* (emphasis added). See claim 1. Nor has the examiner established an express teaching of “drilling through a subterranean formation” using such a drilling fluid system.” See claim 1. The examiner certainly has not established that doing so could react said fatty acid soap with one or more metal surfaces of drilling equipment in contact with said drilling fluid system thereby producing lubricated drilling equipment comprising one or more metal surface comprising a substantially continuous lubricating film providing improved lubricity as reflected in an increase in lubricating film strength compared to a control during extreme pressure testing.

See claims 127, 141, 160, and 171 (emphasis added).

The examiner simply has not established that the method of the amended claims is merely “**the predictable use of prior art elements according to their established functions.**” *Id.* (emphasis added). The examiner certainly has not established that the method of the amended claims could produce improved lubricity comprising “an increase of 25% or more in lubricating film strength compared to a control during extreme pressure testing.” Claims 131-134, 145-148, 166, and, 178-179.

Nor has the examiner established that any cited reference provides an apparent reason to combine Clark and Chesser in the fashion claimed. *Id.* (emphasis added).

For all of the foregoing reasons, Applicant respectfully requests that the rejection for obviousness over Clark, alone, or in combination with Chesser be withdrawn, and that no new rejection of the amended claims of these references be issued .

CONCLUSION

For all of the foregoing reasons, Appellant respectfully requests entry of the amendments and allowance of the amended claims . The Commissioner is hereby authorized to charge any fees in connection with this paper, or to credit any overpayment, to Deposit Account No. 02-0429 (154-28553), maintained by Baker Hughes Incorporated

Respectfully submitted,



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